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The effects of the checkpoints program on parent-imposed driving limits and crash outcomes among Connecticut novice teen drivers at 6-months post-licensure

Bruce G. Simons-Morton^{a,*}, Jessica L. Hartos^b, William A. Leaf^c, David F. Preusser^c

^a Prevention Research Branch, DESPR, NICHD, 6100 Executive Blvd. 7B13M, Bethesda, MD 20892-7510, USA

^b Department of Health Behavior and Administration, UNC Charlotte, USA

^c Preusser Research Group, Inc., Trumbull, CT 06611, USA

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Abstract

Introduction: Because crash rates are highly elevated during the first months of licensure, it is advisable for parents to limit teen driving so that teens can gain independent driving experience under less dangerous driving conditions. This report describes the effect of the Checkpoints Program on parent limits on novice teen driving through six months post-licensure. **Methods:** Nearly one-quarter of all Connecticut teens who obtained a learner's permit over a 9-month period were recruited, providing a final sample of 3,743 who obtained licenses within the next 16 months. Families were randomized to the intervention or comparison condition. Intervention families received by mail a series of persuasive communications related to high-risk teen driving and a parent-teen driving agreement, while on the same schedule comparison families received standard information on driver safety. **Results:** Families who participated in the Checkpoints Program reported significantly greater limits on teen driving at licensure, 3-months, and 6-months post-licensure. However, there were no differences in reported risky driving behavior, violations, or crashes. **Conclusion:** This is the first statewide study testing the efficacy of the Checkpoints Program. The results indicate that it is possible to foster modest increases in parental restrictions on teen driving limits during the first six months of licensure using passive persuasive communications, but that the levels of restriction obtained were not sufficient to protect against violations and crashes.

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1. Introduction

Crash rates for teens are particularly elevated during the first month of licensure and then decline over the first six months and 3,000 miles of licensure (Mayhew, Simpson, & Pak, 2003; McCart, Shabanova, & Leaf, 2003). In addition to youth and inexperience (Williams & Ferguson, 2002), late night driving (Doherty, Andrey, & MacGregor, 1998; Williams & Preusser, 1997) and teen passengers (Chen,

Baker, Braver, & Li, 2000; Preusser, Ferguson, & Williams, 1998) increase teen crash risks. Moreover, it is logical for parents to restrict teen driving on high speed roads and under inclement weather conditions while novice teens gain driving experience and develop independent driving skills (Simons-Morton & Hartos, 2003).

Most U.S. states have adopted graduated driver licensing (GDL) policies that delay licensure and restrict, for a time, exposure to high risk driving conditions (Ferguson, Leaf, Williams, & Preusser, 1996; McKnight & Peck, 2002), thereby reducing crash rates (Foss, Feaganes, & Rodgman, 2001; Shope, Molnar, Elliott, & Waller, 2001). GDL is now viewed as the primary policy approach to reducing young driver crash rates (Williams & Ferguson, 2002). Most states

* Corresponding author. Tel.: +1 301 496 5674.

E-mail addresses: Mortonb@mail.nih.gov (B.G. Simons-Morton), jlhartos@email.uncc.edu (J.L. Hartos), wleaf@preussergroup.com (W.A. Leaf), dpreusser@preussergroup.com (D.F. Preusser).

baseline surveys and were randomized to treatment conditions (2,140 intervention; 2,155 comparison). Of the 4,295 dyads that completed baseline surveys, 3,743 teens obtained a drivers license within 12 months of eligibility and were included in follow-up assessments. This report uses data from teen reports at license ($n=3,277$), three months ($n=3,002$), and six months ($n=2,874$).

Of the 4,295 parents (63% mothers and 36% fathers) who were randomized into the Checkpoints Program, 89% were white, 4% Hispanic, and 4% African-American; 66% were between the ages of 40 and 49 years; 79% were married and 13% divorced; 72% worked full-time and 16% worked part-time; 35% had some college or training after high school and 45% had a four-year degree; and 43% had an annual household income under \$70,000. Of the 4,295 teens, 49% were male and 51% female; all were 16 with 50% being younger than 16 years 2 months; 59% were in 10th grade and 38% in 11th; and 85% reported making mostly As or Bs in school. The average time to license was about 6 months. Of all the demographic variables, only teen gender and race/ethnicity differed by treatment group ($p<.05$). In the intervention group, 53% of teens were female, whereas in the comparison group, 49% were female. In addition, the intervention group was 89% white, whereas the comparison group was 85% white.

2.2. Procedures

To obtain as nearly complete a state-wide sample of teens as practical, study participants were recruited at all 11 of the full-time Connecticut Department of Motor Vehicle (DMV) offices and at one of the two DMV offices that provide driver licensing services on a limited, part time schedule. Teens between the ages of 16 years 0 months and 16 years 6 months who had successfully tested for a learner's permit and a parent were recruited and randomized to intervention or comparison groups after completion of pre-license surveys. Intervention families received by mail the Checkpoints Program materials, including a video, a series of newsletters delivered one every month or so, and a parent-teen driving agreement. Families in the comparison condition were mailed standard information about driver safety so that both groups received on the same schedule the same number of newsletters of similar design and quality. The newsletters for the comparison families provided useful information for new drivers on traffic signs, right of way rules, drinking and driving, safety belts, tips on vehicle maintenance, what to do in case of an accident, and so forth. Parents and teens in both groups completed 25-minute telephone surveys about teen driving at permit (baseline), licensure, and three months, six months, and 12 months after licensure. The study protocol was reviewed and approved by the National Institute of Child Health and Human Development Institutional Review Board and parental consent and teen assent were obtained according to the approved procedures.

2.3. Checkpoints intervention

The goal of the Checkpoints Program is to increase parent-imposed limits on teen driving under higher-risk conditions. The delivery of the educational materials was timed to reflect the driving experience of the study participants. Soon after recruitment, families in the intervention group received a newsletter and videotape, and over the period of the learners permit, a series of eight newsletters, one every 2–4 weeks. These materials were designed to establish the risks of teen driving, normative expectations for parental restrictions, and the benefits of adopting the Checkpoints Parent-Teen Driving Agreement as an effective means of reducing driving risks. Just prior to the time teens were eligible to obtain a drivers license, families were mailed a copy of the parent-teen driving agreement, which is designed to encourage parents to strictly limit teen driving under high-risk conditions such as at night and with teen passengers, and to gradually allow more driving privileges as teens gain driving experience and show responsible driving behavior. The Checkpoints Parent-Teen Driving Agreement has been shown to help parents establish teen driving rules, consequences for violating rules, and markers of experience and success (Hartos & Simons-Morton, 2001). Then, over the first six months of teen licensure, intervention families received eight follow-up newsletters designed to support and encourage them to continue limiting and monitoring teen driving.

2.4. Measures

Driving limits were reported by teens at license, three months, and six months. *Teen passenger limits* were assessed by asking how many teen passengers ("no limits" to "no teens") were allowed. *High-speed road limits* were assessed by asking the types of roads ("no limits" to "neighborhood only") teens were allowed to drive. *Weekend night limits* were assessed by asking how late ("no limits" to "by 9 p.m.") teens were allowed to drive on weekend nights. Separate composite scores for driving limits were derived by adding the scores for teen passenger limits, high-speed road limits, and weekend night limits. Higher scores reflect stricter limits. At the 6-month survey teens were also asked how many miles they drove in the past week, how many times since getting a license they had been pulled over for a moving violation, and how many accidents they had been involved in as a driver.

2.5. Analysis

Chi-square and t-test analyses were used to determine differences in demographic characteristics between teens who did and did not complete surveys at license, three months, and six months, and between teens in the intervention and comparison groups at each time point. T-tests were conducted to assess treatment group differences for teen driving limits and crashes.

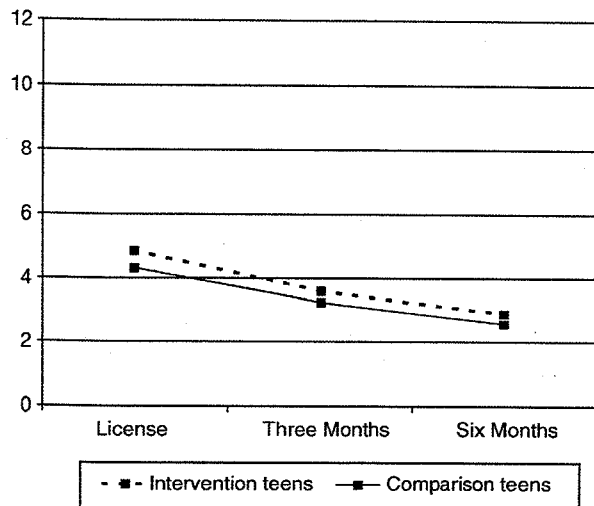


Fig. 2. Composite driving limits at license, three months, and six months: Means. Note: All scores significantly different ($p < .05$) by treatment group.

comparison groups. Composite driving limits could range from 0 (no limits) to 12 (the most strict limits). The median scores declined from approximately 4 at license, to 3 at three months, and 2 at six months. The means for all driving limits by treatment group are reported in Table 2. The results of t-tests indicated that all teen measures of driving limits (teen passenger limits, weekend night limits, high-speed road limits, and composite driving limits) at each time point differed by treatment group, except for teen passenger limits at three months. Compared to comparison-group teens, intervention teens reported stricter driving limits at each time point. Fig. 2 shows that composite driving limits declined steadily and evenly over time for both treatment groups.

Teens reported for the first six months of independent driving between 0 and 5 violations and between 0 and 8 crashes. Overall, 80% reported no violations, 15% reported one, and 5% reported more than one. Seventy-two percent reported no crashes, 24% reported one crash, and 4% reported more than one. Table 2 shows the means by treatment group. Intervention-group teenagers reported fewer violations than did comparison-group teenagers, although the difference was not significant; crashes did not differ by group. Also, treatment groups did not differ on the amount of driving in the past week (not shown).

4. Discussion

To reduce the high level of teen crash rates, most states have adopted GDL policies. While GDL policies vary greatly from state to state, most impose modest restrictions during a provisional licensing period (McKnight & Peck, 2002). A few states, like Connecticut at the time of this study, have yet to adopt GDL in any form. (Since these data were collected, Connecticut has adopted most elements of

GDL.) While the trend toward more restrictive novice driver licensing policies is likely to continue, there remains a need to pursue other approaches to protecting teens during the early period of independent driving. Most parents apply some restrictions on their newly licensed teens (Hartos et al., 2001; McCartt et al., 2003), although these tend to be modest and brief (Hartos et al., 2001). Because some level of parental restriction is common, it may be possible to persuade parents to make these restrictions more substantial and sustained (Simons-Morton & Hartos, 2003). Importantly, even modest parent-imposed restrictions on teen driving have been shown to be negatively associated with risky driving (Hartos et al., 2002) and crash rates (McCartt et al., 2003). Moreover, initial parental restrictions are associated with restrictions through the first year of independent driving (Simons-Morton et al., 2005), which suggests the importance of establishing initial restrictions.

In this paper we report the results from a large, randomized controlled trial testing the efficacy of the Checkpoints Program on parent-imposed driving limits and its effects on crashes. Intervention effects were found for parent-imposed teen driving limits at licensure, 3-months, and 6-months after licensure. These results confirm the findings of two previous small studies (Simons-Morton et al., 2003; Simons-Morton et al., 2005) and demonstrate that it is possible to foster increases in parent-imposed driving restrictions on newly licensed drivers in a state-wide sample using mailed educational materials. Treatment group effects on teen driving limits were consistently greater for the intervention group at license, 3-months, and 6-months post-licensure, except for teen passenger limits at 3-months, which, unfortunately, is one of the driving conditions most closely linked with teen crashes (Williams & Ferguson, 2002). The significant treatment group difference in teen passenger limits at 6-months post-licensure (which were not significant at 3-months post-licensure) may be due to continued exposure to the Checkpoints Program persuasive materials delivered during the first 6-months of licensure leading to a more gradual decline in driving limits. Because there was no treatment difference in the amount teens reported driving during the first six months of licensure, the intervention effect was due to limits on risk conditions and not the amount driven.

This large trial involved a large fraction of newly licensed teens in the state of Connecticut, thus providing an unusual opportunity to examine treatment group effects on crashes, a relatively rare outcome despite being much more frequent among teens than adults. While the treatment group differences in parent-imposed driving limits were significant through 6-months post-licensure, they were modest in magnitude and did not provide a protective effect against crashes during this period. The findings confirm that passive persuasive approaches can provide modest effects on parent-imposed driving privileges, but the effects do not seem to be sufficiently powerful to protect against crashes.

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- Bruce Simons-Morton, Ed.D., M.P.H.**, is Chief, Prevention Research Branch, Division of Epidemiology, Statistics, and Prevention Research, National Institute of Child Health and Human Development, NIH. Dr. Simons-Morton's research on teen driving has focused on the nature of teen driving risks, the benefits and status of parental limits on teen driving privileges, and evaluation of the effects of the Checkpoints Program on parental management of newly licensed teens.
- Jessica Hartos, Ph.D.**, is an assistant professor in Health Behavior and Administration, College of Health and Human Services, UNC Charlotte. Her research interests focus on children at risk, child and adolescent injury prevention, health communications, and the development and evaluation of prevention programs.
- Williams Leaf, Ph.D.**, is Senior Associate at Preusser Research Group. His research has included young drivers, graduated licensing, occupant restraints, pedestrians, and alcohol.
- David Preusser** is President of PRG, Inc. He holds a Ph.D. in Experimental Psychology from Yale University. His research interests are in the areas of occupant restraints, young drivers, and alcohol/drug impaired driving.